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ENTOMOLOGICAL NEWS

DECEMBER, 1932

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JOHN HENRY COMSTOCK, 1849-1931.
Portrait of 1884.

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ENTOMOLOGICAL NEWS

VOL. XLIII. DECEMBER, 1932 No. 10

Fermenting Baits for Trapping Elateridae and Cerambycidae (Coleop.).

By A. B. CHAMPLAIN and J. N. KNULL [1]

During the past five years the writers have made use of fermenting baits in liquid form for the capture of certain beetles in various parts of Pennsylvania. Elateridae and Cerambycidae were the two families of Coleoptera most desired although numerous other interesting insects, including other families of Coleoptera were represented in the catches. The methods used in trapping these insects and the records of some of the captures may be of interest to others.

Various grades of molasses or brown sugar mixed with water were the attrahents used. One part of the better grades of molasses to ten parts of water seemed to give the best results for captures in the groups most desired. This mixture was contained in two quart agate ware pans or one gallon tin pails which were hung on the branches of trees about four to six feet from the ground. Some of these pails were placed near mountain tops, others on upper, middle and lower slopes of mountains, still others in bottom lands and valleys. All contributed a share in the catches, the species taken varying somewhat with the locality and elevation. The best catches were obtained when the bait receptacles were hung in openings or glades adjacent to wooded areas, especially if there were dead, dying or over-matured trees in the region.

Gallon pails allow less evaporation than the two quart pans. There is also less likelihood of pails spilling in the violent summer storms. However, the pans give better catches under proper climatic conditions, no doubt due to the fact that they have a greater evaporating surface.

The traps were generally visited twice a week and the insect

[1] Authors' names arranged alphabetically.

contents was removed, although Coleoptera might remain in the fermenting liquid for a week without deterioration, even in warm weather. Material removed from the traps was transferred, in the field, to vials containing 70% alcohol. In the laboratory, before pinning, the insects were washed in water to remove debris and dissolved bait substance and they were then in perfect condition for drying.

As pointed out by Frost and Dietrich [2] the liquid baits in the traps have three different stages of development; (1) a short period of alcoholic fermentation; (2) a period of acid fermentation and (3) a putrefaction period. Baits are attrahents for Elateridae and Cerambycidae up to the third stage of their development. After this they draw scavangers such as Staphylinidae, Histeridae and Silphidae. When the putrefaction period is reached the writers discard the contents of the traps and add new material.

Undoubtedly many of the insects taken in these traps drop or fly accidentally into the liquid. It is quite evident, however, that many forms go to the traps to feed and are taken in this way. The writers are of the opinion that members of the Scarabaeidae, Elateridae, Nitidulidae and Cerambycidae are foremost among those attracted for feeding purposes. The fact that many males of a certain species are frequently taken in a trap while other receptacles in the same locality do not contain the species at all might be explained by the theory that a single female falling into the liquid thus drew to this particular trap numbers of the other sex. This incident has occurred in a number of cases.

As stated by Champlain and Kirk [3] many of the species taken in traps of this kind are seldom, if ever, collected in general field surveys even though intensive collecting is practiced. It is an excellent method of getting locality and emergence records of many species.

The following records of captures are from Clark's Valley, Rush Township, Dauphin County, unless otherwise stated:

[2] Frost, S. W., and Dietrich, Henry; Ann. Ent. Soc. Amer., V. 22, p. 427, 1929.

[3] Champlain, A. B., and Kirk, H. B.; Ent. News, V. 37, p. 288, 1926.

ELATERIDAE.

ADELOCERA OBTECTA Say, July 21; Laporte, August 6.
ADELOCERA DISCOIDEA Web., July 27.
ALAUS OCULATUS L., numerous in July; five in one pan July 12.
MONOCREPIDIUS LIVIDUS DeG., numerous in July.
LIMONIUS QUERCINUS Say, numerous in June and July.
LIMONIUS BASILARIS Say, numerous in June and July.
LEPTOSCHEMA DISCALCEATUS Say, September 7.
ATHOUS MACULICOLLIS Lec., numerous in July.
ATHOUS BRIGHTWELLI Kby., many specimens in July and August.
ATHOUS CUCULLATUS Say, July 26, August 10; Pond Bank, Franklin County, July 7.
LUDIUS PYRRHOS Hbst., numerous in July.
LUDIUS AETHIOPS Hbst., July 2.
LUDIUS TRIUNDULATUS Rand., Laporte, June 24.
LUDIUS HIEROGLYPHICUS Say, very plentiful in June, July and August.
HEMICREPIDIUS BILOBATUS Say, July 29.
HEMICREPIDIUS MEMNONIUS Hbst., July; Laporte, plentiful in July.
MELANACTES PICEUS DeG., numerous in July and August.
PARALLELOSTETHUS ATTENUATUS Say, numerous July and August.
NEOTRICHOPHORUS ABRUPTUS Say, July 7, 30; Laporte, plentiful in July and August.
DOLOPIUS LATERALIS Esch., plentiful in May and June.
SERICUS SILACEUS Say, plentiful in May and June.
AGRIOTES OBLONGICOLLIS Mel., plentiful in June.
ELATER PULLUS Germ., Laporte, July 29, August 6.
ELATER VITIOSUS Lec., Laporte, July 15.
ELATER VERTICINUS Beauv., numerous specimens in July.
ELATER SEMICINCTUS Rand., numerous specimens the latter part of July; Laporte, July 15.
ELATER RUBRICUS Say, plentiful in June.
ELATER COLLARIS Say, July 2.
ELATER MANIPULARIS Cand., August 3.
ELATER PEDALIS Germ., May 11; Laporte, July 17.
ELATER NIGRICANS Germ., numerous in July.
ELATER MIXTUS Hbst., Laporte, numerous in June.
MEGAPENTHES RUFILABRIS Germ., taken in numbers pan pails at Mont Alto in July by J. O. Pepper.
MELANOTUS COMMUNIS Gyll., numerous in June and July.
MELANOTUS FISSILIS Say, June, July and August; Laporte, very plentiful in July and August.

MELANOTUS CORTICINUS Say, July 21.
MELANOTUS SAGITTARIUS Lec., Laporte, very plentiful in July.
MELANOTUS HYSLOPI Van Z., very plentiful in June and July.
MELANOTUS GLANDICOLOR Mel., Laporte, June 24.

MELASIDAE.

DROMAEOLUS CYLINDRICOLLIS Say, Pond Bank, July 11-20, twelve specimens in one pail, none in adjacent traps.

CERAMBYCIDAE.

DEROBRACHUS BRUNNEUS Forst., numerous in July and August.
STROMATIUM PUBESCENS Hald., Inglenook, August 9.
EBURIA QUADRIGEMINATA Say, plentiful in July.
HYPERMALLUS VILLOSUS Fab., plentiful in July.
ELAPHIDION MUCRONATUM Say, very plentiful in August.
ANOPLIUM CINERASCENS Lec., Hummelstown, June 24, July 14.
PSEUDIBIDON UNICOLOR Rand., Hummelstown, June 9, July 31.
TOXOTUS CYLINDRICOLLIS Say, August 2; Inglenook, July 26, five specimens.
GAUROTES CYANIPENNIS Say, plentiful in July.
LEPTURA EMARGINATA Fab., numerous specimens in July and August in Clark's Valley, Inglenook and Hummelstown.
LEPTURA LINEOLO Say, numerous in July.
ANOPLODERA OCTONOTATA Say, June 10.
ANOPLODERA NITENS Forst., several specimens in July.
ANOPLODERA PUBERA Say, June and July.
ANOPLODERA VITTATA Oliv., numerous in June and July.
ANOPLODERA RUBRICA Say, plentiful in June and July.
ANOPLODERA CANADENSIS Fab., Laporte, very plentiful in July.
ANOPLODERA MINNESOTANA Csy., Laporte, June 20.
ANOPLODERA PROXIMA Say, July 2, 24.
TYPOCERUS VELUTINA Oliv., plentiful in June and July.
STRANGALIA LUTEICORNIS Fab., June.
PHYSOCNEMUM BREVILINEUM Say, Hummelstown, June.
PHYMATODES VARIUS Fab., July 12.
CYLLENE ROBINIAE Forst., numerous specimens in August and September.
XYLOTRECHUS COLONUS Fab., plentiful June and July.
XYLOTRECHUS ACERIS Fisher, July 2.
XYLOTRECHUS NITIDUS Horn, Chambersburg, June 6, 28, J. R. Stear and J. A. Reeves. Three specimens of this rare species were taken in bait pans.
NEOCLYTUS SCUTELLARIS Oliv., August 10.
NEOCLYTUS MUCRONATUS Fab., numerous in July.
NEOCLYTUS ACUMINATUS Fab., numerous in June and July.
ANTHOBOSCUS RURICOLA Oliv., July.

CLYTANTHUS ALBOFASCIATUS Lap., June 10.
EUDERCES PICIPES Fab., many specimens June and July.
PURPURICENUS HUMERALIS Fab., very plentiful in the southern part of the state in June and July.
PURPURICENUS AXILLARIS Hald., numerous specimens in June and July in the southern part of the state.
MICROGOES OCULATUS Lec., Laporte, July 17, 30.
MICROGOES DEBILIS Lec., one specimen in June.

CLERIDAE AND BUPRESTIDAE.

The following captures were probably due to adults falling into the traps accidentally:
CYMATODERA BICOLOR Say, Inglenook, July 20.
CYMATODERA UNDULATA Say, Inglenook, July 20.
ENOCLERUS LILJEBLADI Wolc., Cold Springs, Adams County, September 6.
DICERCA PUGIONATA Germ., July 26.
CHRYSOBOTHRIS SEXSIGNATA Say, July 20.
CHRYSOBOTHRIS VERDIGRIPENNIS Frost, September 7; Laporte, July 29.
ANTHAXIA QUERCATA Fab., July 26.

The Rhopalocerous Lepidoptera of Scott County, Kansas.

By VIRGIL F. CALKINS, Scott City, Kans.

(Continued from page 229.)

Family LYCAENIDAE.

Subfamily Theclinae.

STRYMON MELINUS Hubn. Common Hair-streak. A fairly common, and the only Hair-streak, to be taken at almost any time that butterflies are on the wing. I have reared specimens, the larvae of which were feeding on alfalfa flower heads, attended by swarms of small black ants.

S. ACADICA Edw. The Acadian Hair-streak. But one specimen of this species has been taken in Scott County. It was captured on the State Park Grounds in the northern part of the county. An unusual capture.

Subfamily Chrysophaninae.

HEODES DIONE Scud. Dione Copper. Uncommon this far south; almost every year a few stray specimens are taken, usually in worn and faded condition.

H. THOË Bdv. & Lec. Bronze Copper. The Bronze Copper is a distinctly rare insect in this locality. But three or four examples have been recorded. Its food plant, Dock, is abundant in favorable localities, but the species is rare nevertheless.

H. HELLOIDES Bdv. Purplish Copper. One stray butterfly of the female sex is the only specimen ever recorded for this region. Extremely rare.

Subfamily Lycaeninae.

LEPTOTES MARINA Reak. Marine Blue. This beautiful little Blue is uncommon, but one is almost sure to take a few specimens each year. The food plant is Alfalfa.

BREPHIDIUM EXILIS Bdv. The Pigmy Blue. This interesting little species so often referred to as "the smallest butterfly" is a stray in this locality. Three specimens have been recorded in the last five years.

HEMIARGUS ISOLA Reak. Reakirt's Blue. Prior to the year 1928, no specimens of *isola* were ever taken. During the summer of 1928, *isola* was a new capture, and since that time it has been abundant, as a rule, every year. As many as two hundred specimens have been taken within three hours. Their favorite food plant is pin clover, and other clovers. A very pretty little Blue, and interesting because of its appearance for the first time in 1928.

EVERES COMYNTAS Godt. The Eastern Tailed Blue. While this species ought to be common, it is not. Occasional specimens are taken only.

PLEBEIUS MELISSA Edw. Orange-margined Blue. This beautiful Blue is abundant every year, but one has to be at hand when they first emerge to get good specimens. I have reared very many on alfalfa. This species is one that is always attended by ants in the larval stage. The slug-shaped caterpillar prefers the flower head of the alfalfa, and by the presence of countless small black ants, it is always suspected. It can be very easily reared in captivity by gathering the flower heads. The slugs, even when in captivity, are sure to be found by ants.

P. ACMON Dbldy. & Hew. Acmon Blue. Very rare. Very few specimens have been recorded.

LYCEANOPSIS PSEUDARGIOLUS Bdv. & Lec. The Spring Azure, the Common Blue. This is another species that should be common, but is not, here on the prairies. About a half dozen specimens have been collected. They were small and dwarfed.

L. PSEUDARGIOLUS NEGLECTA-MAJOR Tutt. The Neglecta Blue. Also uncommon, being only a form of the above species.

Family HESPERIIDAE.

Subfamily Pyrrhopyginae.

EPARGYREUS TITYRUS Fabr. Silver-spotted Skipper. This big skipper is taken occasionally, but not commonly.

THORYBES DAUNUS Cram. (*bathyllus* A. & S.) The Southern Dusky-wing. An unusual capture for this locality.

PYRGUS TESSELLATA Scud. Tessellated Sipper, Checkered Skipper. Found abundantly over the county. It is especially common in the fall of the year. Larvae are partial to mallows, hollyhocks, etc.

GRAIS STIGMATICUS Mab. Stigmaticus Skipper. A very rare thing, here. On a hot August day, after a dust storm of a few days previously, a specimen was captured hovering over Zinnias. The same afternoon two more specimens were taken, they being in an almost unrecognizable state.

PHOLISORA CATULLUS Fabr. Sooty-wing. Abundant during the spring of the year, but not taken at any other time of the year.

THANAOS PERSIUS AFRANIUS Lint. Afranius Dusky-wing. But one specimen is known from this county. It appeared after a wind storm; having never seen anything like it, it was sent away for identification, and Dr. Dyar labeled it *Thanaos afranius* Lint.

TH. JUVENALIS Fabr. Juvenal's Dusky-wing. What few specimens that are taken occur early in the spring. Uncommon.

TH. HORATIUS Scud. & Burg. Horace's Dusky-wing. Only occasionally taken, the species also being found in early spring.

TH. PACUVIUS Lint. Pacuvius' Dusky-wing. But one specimen has ever been taken.

TH. FUNERALIS Scud. & Burg. The Funereal Dusky-wing. This handsome black skipper seems to represent another wind blown species. It is hard to get in perfect condition for this reason. While previously considered a prize, lately numerous examples have been taken and the species may now be listed as occurring regularly.

Subfamily Hesperiinae.

COPAEODES AURANTIACA Hew. Hewitson's Skipper. Only one specimen of this conspicuous species has been taken, where it was sipping nectar from a marigold blossom. It represents a wind blown species—probably from Texas.

PAMPHILA UNCAS Edw. Uncas Skipper. A few specimens of this Hesperid are to be taken occasionally in the spring of the year, when they fly with *Atalopedes campestris*. Uncommon.

HYLEPHILA PHYLAEUS Dru. The Fiery Skipper. Very rare in this region.

POLITES CERNES Bdv. & Lec. (*Limochores taumus* Fabr.) Fawny-edged Skipper. Rare. Only an occasional specimen is taken.

ATALOPEDES CAMPESTRIS Bdv. Field Skipper. The most common Skipper to be found. In the fall of the year, it is very plentiful and one can collect hundreds in a few hours by picking them off flower heads.

ATRYTONOPSIS HIANNA Scud. The Dusted Skipper. This species probably is a straggler from Nebraska and it is considered a prize when taken. Perfect specimens are hard to get.

AMBLYSCIRTES VIALIS Edw. The Roadside Skipper. Not common. One year, a number of specimens were taken. Since that time, only about four or five strays are taken within the year.

LERODEA EUFALA Edw. Eufala Skipper. This drab Skipper is not uncommon during some seasons. It frequents the alfalfa and clover fields, and if any are to be found, they may be taken there.

Macrolepidoptera : Species and Lower Concepts.

By J. D. GUNDER, Pasadena, California.

(Continued from page 240.)

THE TERM TRANSITION FORM.

For years lepidoptera check lists have patiently carried names under the term "ab.". "Aberration" was a category, a conglomerate unit as a whole, which no one knew very much about and one which no one troubled to study carefully. It was a place for a mixture of names, a dumping ground for those things roughly spoken of as sports, freaks, mutants, individual forms or whatever collectors and cataloguers cared to place under that heading. So the thought became prevalent in many quarters that "abs." were of little value and hence of less scientific use. The very meaning of the word "aberration" tended to taxonomically kill any name placed under that heading and the "no good" idea was further enhanced by the fact that most collections possessed few, if any, of these specimens in series. Besides that, the apparent lack of such variation in other insect Orders furnished basis for depreciation of that found in Lepidoptera.[1] Nevertheless, as the years went by, well known Lepidopterists like Scudder, Boisduval, Edwards, Holland, Barnes, McDunnough and others continued to recognize and name "aberrations". It was the best they could do using that title, being the only term open to them, regardless of the somewhat general disapproval of it. Those pioneer authors saw future value in much of the variation which came their way and they knew something must be back of its existence. The names they applied form the working basis of our present research and without such names, little could now be accomplished; likewise, the authors of today and tomorrow, by following their example, add to that volume of definite record which is essentially needed for corroborative demonstration.[2]

[1] The mere excuse that the Lepidoptera (and some Coleoptera) are the only or principal Orders showing sub-sub-specific variation is NO REASON within itself for such variation not being accorded status. It is all the more reason for according to status! The alibi of Authors that "some do and some don't" is poor exemption thought in itself. Their mental deduction is beyond my comprehension.

[2] The method of science in principle follows four steps: 1st. Observation of facts and things. 2nd. Classification of facts and things. 3rd. Experimentation with facts and things. 4th. Demonstration of facts or truth.

The reasons for naming variations are the same today as they were yesterday, it is only the kind of variation which should be named that has changed. *The kind of variation which should be named is a very important matter*, especially in the light of present knowledge. It leads us up to the question of what "aberrations" formerly were and that has been the subject of my investigation for the past several years. To unscramble the old "aberration" category meant that all available type material must be examined and that upper and under side photographs of every one must be secured. That was the only way to work-out the question and be certain of what the names represented. This necessitated the visiting of most of the American entomological centers and the taking of upwards of 2000 photographs, besides having many made in Europe. I found that specimens listed as "aberrations", for example, in the Barnes & McDunnough Check List of 1917, came under several different headings about as follows:

First. Various kinds of teratological aberrations, for example, *Argynnis coronis baroni* Edw.

Second. Diversely inflicted specimens, like *Danaus archippus pulchra* Stkr.

Third. Sexual forms, like the females of the *Eurymus*.

Fourth. Recurrent individuals which made up the vast majority of names, like *Euphydryas phaeton superba* Stkr.

From the above it can be seen that the term "ab." really consisted of a heterogeneous mixture of names and was not a homogeneous classification division at all. Therefore, if the taxonomy of the group was to be straightened out, a few radical changes must be made, even to the exclusion of the word "ab." and the substitution of a new categorical concept. Further diagnosis follows.

First. Regarding teratological specimens. In character these are, for the most part, the real aberrations. They are aberrations in the true sense of the word itself, hence I have restricted the word in macrolepidoptera classification (see its position on chart) to mean only examples showing their general abnormal peculiarities which are broadly considered non-inheritable and hence unnamable. Teratological aberrations, as

a whole, have been discounted when recognized in American and, I believe, in British lists. They are named after a fashion in Germany. If among these socalled abnormalities, there are certain recurrent types which can be shown, by reasonable deduction, as profoundly or otherwise affecting the evolution of a group, then they should be named and a classification as a *name control* worked out. This classification unit could be added under the existing transition form divisions. However, I see nothing on our American lepidopterological horizon at the present time to prompt naming them or their "non-obvious" equivalent, as it has been called, much less considering a classification for them or for any more names yet to be given to them.

Second. Regarding inflicted specimens or specimens whose wing patterns are changed by "sickness" or by external misfortune. These have no classification rating and also fall into the synonymy. It is unfortunate that such examples are occasionally named.

Third. Sexual forms which were listed as "abs.". These transfer into their own category. (See November section of this article.)

Fourth. Recurrent individuals within a species or within a race, which by change of color or by change of pattern graduate with persistent characteristic similarity from parental type to definitely limited variation away from parental type, have been termed transition forms. (See first reference, ENT. NEWS, May, 1927.) These are the only specimens, formerly listed as "aberrations", aside from those listed in paragraph just above, which are worth nomenclatorial rescue. They are in no sense like "aberrations", being neither related to cause (*they are considered the result of inheritance, and not of happenstance*[3]), nor by appearance (*they are superficially characteristic as a whole*), nor by classification (*they have a recurrent categorical value*). For these reasons and others, transition forms should not be confused with "aberrations". As entities they are entirely different. Taxonomically, it is simply a question of dropping the word "aberration" (or "ab.") in connection with many of the old names and employing the word transition form (or

[3] "Happenstance" is a newly coined word of expressive meaning.

tr.f.) instead. In the future if "aberrations" are named, they will most likely fall into the synonymy, but if transition forms are named, their worth will be assessed just as in any other classificatory group. To continue the use of the word "ab." in the light of a legitimate concept as formerly would be the same as telling the zoological world that entomolgoists still believe in basing names upon "freaks", "sports" and what-nots, all of which is not the case. Zoologists *have made fun* of the old aberrational division, as such, long enough; let us be rid of it.

Transition form classification, with its divisions under Change of Color and Change of Pattern, as shown on plate VII, July issue of this article, was evolved to include all component units which can be cited by name. Its formula serves taxonomy as a name control and in this respect is satisfactory for all transition forms which have come under my observation. By its use I see no "failure to classify transition forms", particularly in North American groups, found north of old Mexico and I have a pretty clear idea that the European and Asian fauna must of necessity fit in. Unfortunately, I have not space in this paper for a detailed discussion of its merits. Another article in the future can deal with that angle at a time when subsequent queries and assertions will be gone into.

In this paper I would like to enumerate a few salient points which I hope will awaken a more serious consideration of transition forms, as well as a deeper appreciation of their value. These evolve around the problems of inheritability, the mechanics of which the geneticists are gradually solving. My friend, Dr. T. H. Morgan, well-known geneticist of the California Institute of Technology at Pasadena, has said to me, "You entomologists have furnished genetics a problem and we will begin where you have left off"; meaning, of course, that the geneticists hope to prove the causes, the effects of which they have been shown. Entomological record of variation, therefore, has been of some use. The following general observations regarding transition forms were made in the course of my investigations.

First. Transition forms always occur year after year, espe-

cially in their own little localized localities, or segregated metropoli, more so than in the adjacent ranges of their species.

Second. Typicals or parental stock from these segregated metropoli are always either slightly lighter or slightly darker according to the dominant or progressive tr.f. present.

Third. A comparison of parental stock from two similarly located metropoli having the same dominant tr.f. present may show the stock of one to average lighter than that of the other. This denotes an "older settlement" for the one and a comparatively recent habitation for the other.

Fourth. A species having an extensive distribution over a continent or portion of a continent may produce many tr.fs. in one region and few, if any, in others. A species inhabiting several continents or separate geographical land areas may produce tr.fs. on one and none on others. Another species, take for example *Pieris rapae* L., produces two tr.fs. under Change of Pattern in Europe, *i.e.* immaculism and melanifusism; but only one in North America, *i.e.* immaculism.

Fifth. Tr.fs. have led to the discovery of new species. Change of Color tr.fs. have pointed out the existence of similarly colored races, *i.e.* tr.f. *foxi* of *aurilacus* led to the discovery of *anicia morandi.* Mr. W. G. Wright knew *chalcedona,* but if he had realized the significance of *chalcedona fusimacula,* he could have looked for race *olancha* Wri., instead of finding it by pure chance. *Euphy. chalcedona omniluteofuscus* points to a race of yellow *chalcedona.* This may be eventually found in northwestern old Mexico or even in our own Great Basin, providing it has not become an extinct entity. (I believe the oldest *Euphydryas* are perhaps those groups having yellow or a yellowish cast ground color and I also believe it possible that the North American members of this genera which are red received that color in a definite sequence of shading, yellow through to red, since the Ice Age. *Morandi* has the purest yellow color of them all, its neighboring races being of intermediate shades between yellow and deep red. *Morandi* has a unique, high, desert-surrounded and very isolated mountain top habitat which has evidently preserved its color. The genus *Melitaea* has yellow (chromatism) tr.fs. as well.)

Sixth. Tr.fs. seldom occur in equatorial or tropical regions; if so, they are, what can be termed, of semi-tropical or most likely temperate zone genera which are "loitering south". I found no tr.fs. in Mexican collections when recently visiting that country though they must occur in certain species in the northern and northwestern section. South American, South African and Australian lists show nothing comprehensible. Therefore, it can be said that, with extremely few exceptions, *transition forms are only found in the Northern Hemisphere,* in regions termed temperate and near-arctic. This being the case, the supposition is that insect life-changes (in lepidoptera, at least) generate only "in the north". This is consistent with certain biological theories sometimes expressed.

Seventh. Tr.fs. of a kind always occur looking alike, their variation grades being along similar lines. A species in a genus and any races thereof always produce a kindred tr.f. variation. All tr.f. variation grading away from parental type always has a definite and similar limit for the design change; that is, the change is not boundless. It is confined to that portion of the wing surface and to those certain characters which are subject to the change, all other maculation remaining unchanged. A tr.f. of a kind is no more a "series of tr.fs." than a species is a "series of its specimens". Both are alike in this sense. The former has a wider range of variation than the latter and the one is as legitimately consistent in its wider range as the other is in its shorter range. It is just as necessary to have a series of a tr.f. to show its range of variation, as it is to have a series of a straight species (or race) to show its range of variation. In a collection, you would not simply have a pair of a species to show true variation, but a series; similarly in a collection you would not have a pair of a tr.f. to show true variation. In a genus, we name its species, though they look similar; in a species, we name races, though there is not much difference and they are similar; in a tr.f., we name its divisions, though they also "look similar". What holds good for one must hold good for another; otherwise, we break down the whole taxonomic system.

Eighth. In a species, or perhaps I should say a butterfly

group, two namable tr.fs. may be expected under Change of Pattern and two presumably under Change of Color, although in color change it is rare indeed that more than one is found or even possibly exists. Under Change of Pattern it is quite often the case that only one tr.f. is found, the opposite tendency having "died out" or rather the ability to produce no longer is there, no longer needed perhaps. In *Cynthia cardui* L. we have an example of this; its tr.f. *clymi* Ramb. (albifusism) being common and world wide, while its tr.f. *ate* Stkr. (melanifusism) is known by the single holotype collected in Summit County, Ohio.

Ninth. Of the two kinds or opposed tr.fs. in a species, the common or predominant type continues to be in excess, that is, within our idea of a localized geographical region. In southern California we have a preponderance of *Euphy. chalcedona,* tr.f. *fusimacula* B. The inbreeding of its elongated white spotting tends to lighten up the parental stock of this region. In northern California and Oregon we have an excess of *Euphy. colon,* tr.f. *mcdunnoughi* G. (similar to *chalcedona mariana* B.). Its melanifusism continues to retain or increase the dark design of *colon* and further restrict what light maculation is present. It would be interesting to know the theoretically balanced territory between these two.

Tenth. Examples of tr.fs. approaching or nearest parental type are always more numerous than those examples, termed well developed, which are farthest away from parental type. A charted arc of proportion usually shows 99 percent near parental type and 1 percent opposite. Sometimes the smaller percentage is larger, depending on the "state of flux", but never is the proportion anywhere near reversed. The grading of color and pattern of tr.fs. into parental type is absolute; that is, it is impossible to draw a line of demarcation.

Eleventh. A family or genus considered in a state of flux produces more tr.fs., while those considered constant have fewer, if any. As an illustration, the Satyridae are constant, while the Nymphalidae are not.

Twelfth. In some tr.fs. all four wing surfaces do not uniformerly register color or pattern change. Sometimes only the primaries show development, other times only the secondaries.

In rare cases a left primary or a right primary only or a secondary is subject to change. Occasionally melanifusism and albifusism, for example, are found in combination. Tr.f. classification via the method of wing distribution or combination is taxonomically impractical. Dr. John A. Comstock in his "Butterflies of California", page 302, suggests this method, but he has since discarded it as wholly inadequate for obvious reasons.

Thirteenth. Fancy breeding tactics have thus far resulted in producing no more tr.fs. than similar numbers which can be caught in the field, *oftimes less.* (A reason for this is given in last paragraph, page 108, April, 1928, ENT. NEWS.)

Fourteenth. Individual forms, freaks, abnormalities and sports (these are the unnamables) occur *in the same ratio* in tr.fs. as they do in the typicals of same species.

Fifteenth. Color change or pattern change, as found on the wing of a tr.f. lepidopteron, is superficial to its physical well being and does not incapacitate the reproductive organism of the individual. (Sometimes tr.fs. are spoken of as "weak". They are no weaker than similarly found weak typicals. The proportion is relative. This weakness is coincident and due to other causes.) As indicated elsewhere, tr.fs. are capable of simple and well-defined classification, but if they are just derelicts of nature and not due to *a degree of inheritance,* then their classification would be as difficult and complex as are the various causes which contribute to an inconsistent, alien and terminative existence.

Sixteenth. Being fertile produce of a progressive or retrogressive inheritance which they transmit by their continual occurence in parental stock, tr.fs. are the undoubted medium or driving force behind modification. They are Nature's First Lieutenants, carrying out her orders by distributing those *overdeveloped characteristics* which bring to Lepidoptera that environmental ratio of change necessary as to wing color and pattern.

A careful perusal of the above statements will show that transition forms are IMPORTANT Lepidoptera and that they will continue to have as NECESSARY and LEGITIMATE a position in Macrolepidoptera classification as any concept lower than species.

My Ideas on the Naming of Lepidoptera.

By JAMES E. COTTLE, Hayward, California.

I have always been an amateur in the field of entomology; that is, I have never attempted much real taxonomic work. There are certain advantages for anyone who can retain his amateur standing and I have had the opportunity of enjoying most of these. Being able to actually discover new species and track down the out-of-the-way habitats of the rarer sorts has its benefits and rewards. An amateur with a good collection, and I consider that I have a fair one, season after season of actual field experience, usually accumulates a little practical knowledge. Whether this is any better or any worse than that of "desk professionals", who have only book learning and laboratory experience with assorted material at best, is a matter of opinion. Sometimes younger professionals lack the broader essentials of analysis and their viewpoint never rises above some of the impractical sides of what they are taught. The character of their instruction, though, is ofttimes reflected in the ideas they exploit. This paper expresses adverse judgment in part on several papers [1] by such professionals which have of late decried the naming of butterfly variants.

I sometimes feel sorry for eastern American lepidopterists because they cannot live in the west to work where we have 75 percent of the butterfly habitats and most of the butterflies which show good variation. The better western collections are built up with the idea of showing variation, while those in the east, leaving out the Barnes' collection in part, are usually short on specialized series. Sometimes those eastern collections are wonderful from the standpoint of displaying thousands of world species, but they are negative, I am told, when it comes to showing the research specialist anything about the different kinds of variation range, and variation follows definite courses

[1] A. B. KLOTZ. On the Naming of Individual Variants in Lepidoptera. ENT. NEWS., Nov. and Dec., 1930.
G. TALBOT. The Naming of Individual Variants in Lepidoptera. ENT. NEWS, Mar., 1931.
A. G. RICHARDS, JR. Sub-Sub-Specific Names in Lepidoptera. ENT. NEWS, Oct., 1931.

in a species which can be demonstrated and traced by a proper order of arrangement.

I wonder where Mr. Klots, followed by Mr. Talbot and trailed by Mr. Richards, Jr., ever picked up the idea that transition forms were anything so unworthy as to be called "individual variants"? I don't believe I have ever seen that term used before. Calling them that is misleading and makes me think of Edgar Allen Poe's no-never-hardly-ever origination. The well-known Stanislaus said, *"To believe with certainty we must begin by doubting"*. There is a good deal of truth in that and I imagine the above three gentlemen who now doubt, and it is only natural that they would from their restricted viewpoints, will eventually stop calling butterflies "individual variants" and call them by their described names or in general by some other term which does them more justice. To call these specimens aberrations would be putting them in a class with the freaks and there is certainly no place for them in with that unfortunate group. Perhaps Mr. Gunder's term transition form is just as good as any other. Mr. Gunder at least originated that term for them. To be "individual variants", specimens must be of exceptional rare occurrence, hardly ever seen, unique, unprecedented, uncommon and scarce as hen's teeth. This is NOT THE CASE with the better-known transition forms and I hardly think it worth while to combat such lack of knowledge about them and their continual occurrence. However, I am going to give one instance of undiminished, regular and mass continuity and then not take up further valuable text space in that regard. I call attention to tr.f. *muelleri* of *Cynthia carye* Hbn. which was named by Mr. Letcher. I knew Letcher very well and he had a good series of these tr.fs. When *muelleri* was named in 1898, he said in his o.d., "It is found with such frequency as to entitle it to a name. Whether it is a remarkable case of 'aberration,' a number taking the same form, or an example of the evolution of a true variety, time only will tell." Is not that sentence by Mr. Letcher significant of what knowledge they had in an older generation? And doesn't it show plentifulness instead of indi-

vidualness even for that period? Two contemporary collectors, Mr. Mueller and Mr. Grinnell also possessed numbers of these specimens; in fact, Mr. Grinnell named one of these "steps in the grade of" *muelleri* which has since been shown by Mr. Gunder to be a synonym. Mr. C. J. Huguenin, another San Francisco man who passed away not long ago, also had 5 or 6 examples in his collection and his collection was not considered very large. My first collection, which was destroyed in the San Francisco fire, had a dozen or so phases of tr.f. *muelleri* represented. Around San Francisco at the present time most of the collections display specimens which stand under the name of tr.f. *muelleri* and there are quite a number of them. All the above recites only what I know of in my region. To the south in Los Angeles, I understand that *muelleri* is just as well represented. Mr. Gunder in his Butterflies of Los Angeles County, Calif. (Bul. So. Calif. Acad. Sci., plate 23, May-Aug., 1930) figures 20 specimens and they seem to be all of the well-developed types, so the nearer parental types, which he does not illustrate, must be even more in excess. To sum up all the above data, one would hardly be able to call tr.f. *muelleri* an "individual variant", considering its commonness. If not, then what transition forms can be called "individual variants" I don't think any of them can be. As a species is rare, so would their tr.fs. be rare, but rareness is not a criterion of value to go by when seeking a term to call this group by; so, "individual variants" is wrong and very wrongly used as a headline by the gentlemen mentioned in the forepart of this article.

My idea on the naming of lepidoptera is that "concepts below the rank of subspecies MAY bear scientific names (Talbot)", but I go a step farther and say that they SHOULD bear scientific names; however, (now this is important), such names must be subject to regulation to save duplication. Mr. Gunder is using a scheme for their classification. Can anyone suggest a better scheme if "Gunder's scheme is untenable", according to Klots, Talbot and Richards, Jr.? Remember that for years Dyar, McDunnough, Benjamin and others have been praying for a way to hold in check or classify "abs.". Gentlemen, it is

easy to use the word "fail"; that is, it is easier to be critical than to be correct, but have you anything to offer in place of Gunder's system? Among the so-called "abs." in North American Check Lists, are you prepared to point out specific instances of failure as far as classification for name retention goes? You have used the word "fail"! Now, back up that statement, not with generalities, nor by citation of little-known exotics, but by instances of failure in American names given American butterflies.

Some Uses of Masonite Board in the Mounting of Insects

Being recently forced to devise some means of making serviceable spreading boards for Lepidoptera and a spreading surface for beetles cheaply and quickly I obtained some Masonite slabs from a nearby lumber company and setting to work soon produced the desired equipment. Hoping that the manner in which I managed to solve this problem may be of some help to others, I am giving here a brief description of what was done.

To those who are not acquainted with Masonite board, I will say that it is made of a soft pulp composition with one side smooth and the other slightly perforated and is used mostly for insulating the walls of houses. This material is coming in for more and more use among Entomologists as a substitute for cork and in the opinion of many is better than that for which it substitutes as well as cheaper.

The making of spreading boards with the aid of this material is child's play. The Masonite is simply cut up into strips a foot and a half long with the width varying with the size of spreading board desired. Then redwood boards are obtained of the same length, about three inches in width and three quarters of an inch in depth. These boards are placed on a flat wooden surface with their smoothest sides down and their finest edges parallel at a distance varying with the size of the insects which are to be mounted on that particular board. The Masonite strip is next placed down squarely over these two boards with its smooth side against them and is securely nailed to them with four nails, two at each end. In my particular case the nails were slightly too long and came through the boards, but a file soon fixed this up and the upper surfaces of the boards sandpapered to make them smoother. I have found spreading boards made in this way to be quite as

serviceable as the best of the custom made ones and it is easily possible to make a set of ten of them in the short space of an hour.

The spreading surface stand that was produced with the aid of Masonite turned out very well and was made very quickly. Four redwood boards of the same size as those used in making the spreading boards are placed in an even square on a flat surface first. On top of them is placed a square of Masonite cut so as to fit over them evenly and this is nailed on to them strongly. Next a square of stiff paper of the same size is cut out and then soaked with water. The wet paper is stretched as tightly as possible across the upper surface of the stand opposite to the Masonite and tacked in place. This paper when allowed to dry in the sun should become as taut as the head of a drum and with the soft Masonite underneath to receive the points of the pins to any desired depth proves an admirable mounting stand for Coleoptera, Hymenoptera and similar insects.

D. V. BROWN, Berkeley, California.

Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The **figures within brackets** [ ] refer to the journal in which the paper appeared, as numbered in the list of Periodicals and Serials published in our January and June issues. This list may be secured from the publisher of ENTOMOLOGICAL NEWS for 10c. The number of, or annual **volume**, and in some cases the part,, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞*Note the change in the method of citing the bibliographical references, as* **explained above.**

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OBITUARY.

Dr. William G. Dietz.

Dr. WILLIAM GEORGE DIETZ died April 13, 1932, in his 83rd year. His entomological interests which were first shown in early childhood continued up to the end of his life. During his last few weeks, when he admitted an increasing weariness, he forced himself to work on his spiders so that they might be left in condition for others to use.

He was born in Southern Germany (Tüingen, we think) July 30, 1848, and early in life lost all his family, except a grandmother, in one of the smallpox epidemics which ravaged the country. This grandmother was apparently a woman of discernment. She early recognized his fondness for plant and beetle and encouraged him in his natural interests. The bond between them must have been very close for all through his long life he revered her memory and her birthdays were always for him holy days.

The education of his youth was thorough and broad. In later years he remembered more Latin and Greek from his early training than his daughters knew as they emerged fresh from three and four year courses in these subjects.

He began the study of medicine at Heidelberg in 1867. His university reports, which have been recently found, are annotated by his professors with words of praise for his industry and skill. His work at the university was interrupted by the Franco-Prussian war in which he served on the medical staff. He evidently came to America soon after the close of the war and finished his interrupted medical work at Hahnemann Medical College in Philadelphia.

While studying in Philadelphia, Fairmount Park was an oasis for him. Here he collected beetles and studied flowers. I have found among his things a collection of mounted, pressed wild flowers all named, classified and dated 1875. They are remarkably well preserved.

His entomological interests enriched his whole life. Through his busy years as a physician in Hazleton, Pennsylvania, he combined vocation and avocation so closely that life was busy for him from early morning until late into the night. As a daughter looking back upon his life, I recall no shadows of illness, nor weariness, nor depression. He took practically no vacations. After his strenuous hours of professional work, he would go into his library and work on his entomological material. It was the one room in the house where children were expected to touch nothing and where efforts at house-cleaning raised heavy protest. During his active years he wrote many entomological papers and made some beautiful drawings. First Coleoptera, then Lepidoptera, next the Diptera and finally the Arachnida held his interest. He did much collecting himself and of course had many who collaborated with him. His collections are preserved in various institutions, his Coleoptera and Microlepidoptera in the Museum of Comparative Zoology, his Diptera and Arachnida in the Philadelphia Academy. His family life was simple and serene. He was devoted to his wife, Bertha Katherine Waaser, of Schuylkill Haven, Pennsylvania, and never became reconciled to the separation caused by her death seven years prior to his own. Every evening at six o'clock, when the bells of a nearby church played the evening hymn, it was his unbroken custom to retire to his bedroom and commune with her memory. It seems more than a coincidence that, after a brief illness of scarcely three days, he should have slipped away at that same hour with such simplicity, such dignity and with such apparent willingness to go that his passing seemed to be a beginning rather than the ending of life.

To me he seems a perfect example of an attuned personality.

These recent years of financial depression did not reach him emotionally. His philosophy of life was remarkable. So often, I have heard him say, "Do your best as you see it and then don't worry." And again, "As you look back on life, nothing much matters except giving others a helping hand, help others all you can." Perhaps if more of us could combine such an abiding interest in nature with such an humanitarian attitude toward our fellowmen and could hold such a steadfast faith in a future life, we might be better able to look beyond the common, material difficulties of life and see more clearly the vision which shines for us all on the horizon.

MARJORIE D. BATCHELOR.

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EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

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